EFFECTS OF CLIMATE CHANGE AND LAND TENURE ON FOOD SECURITY

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Development Dialogue Forum
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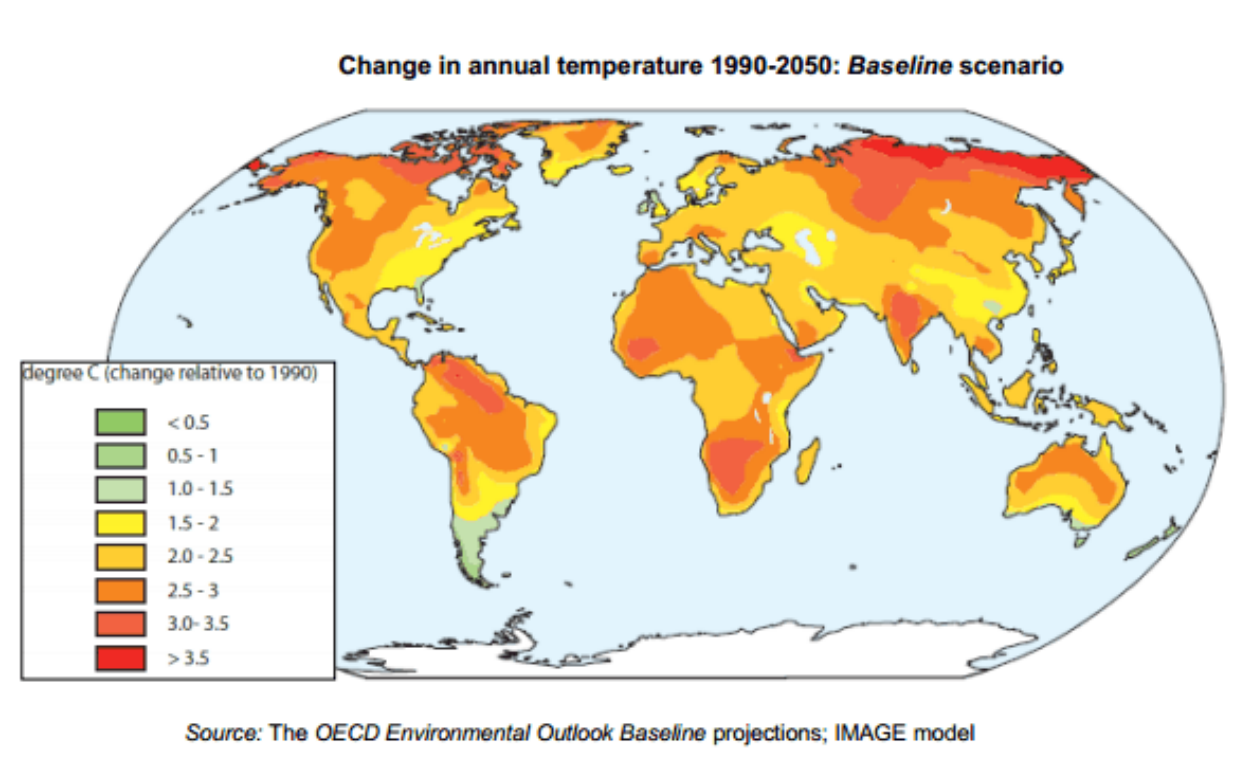
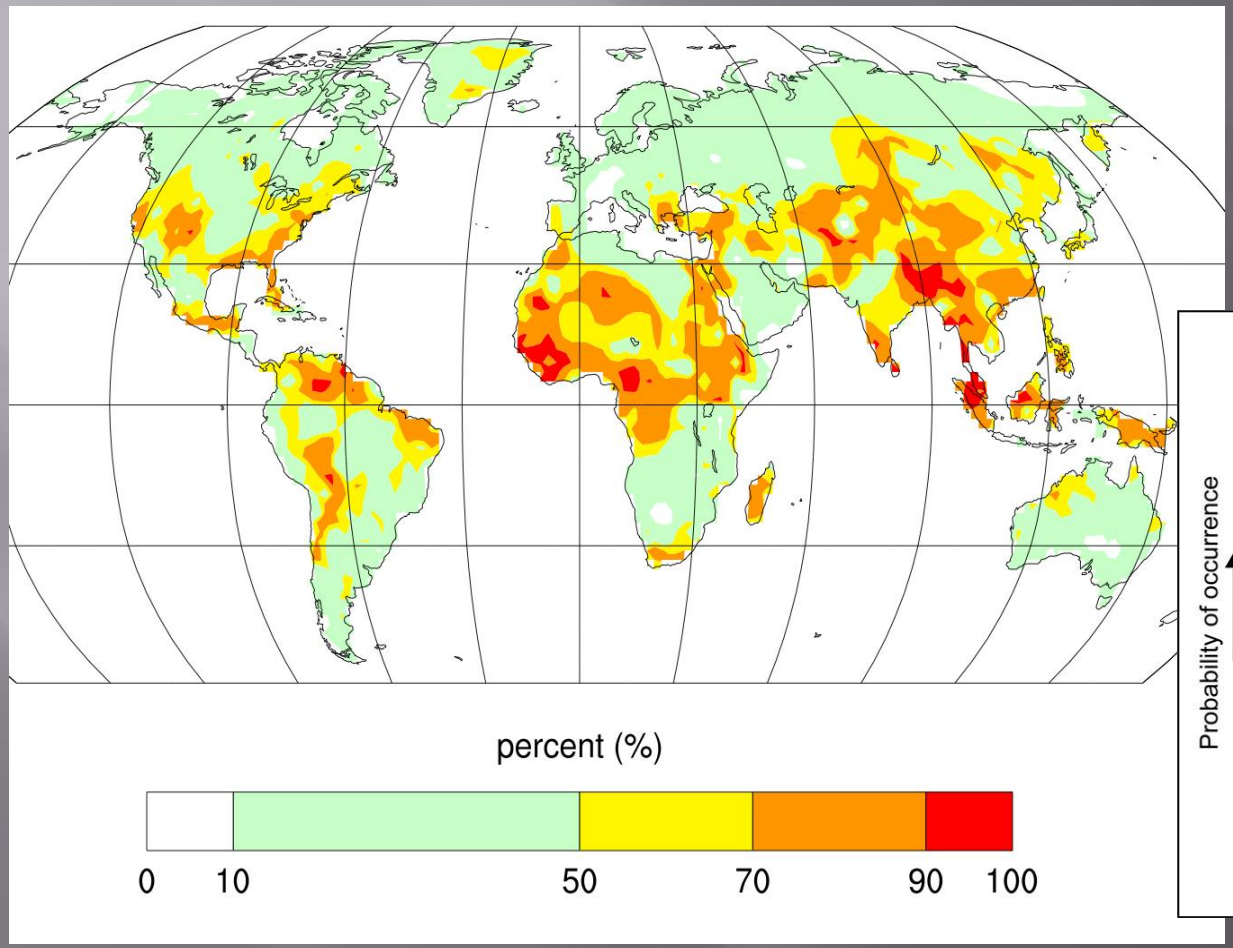
Annual global temperatures are on the increase

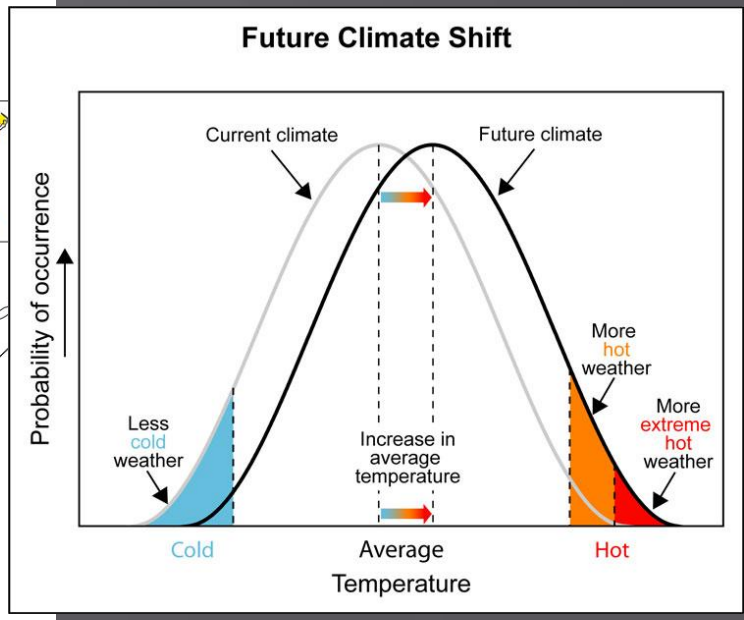


IPCC WG 2 Technical report, 2007

Summers in 2040 – 2060 Warmer than Warmest on Record



Battisti and Naylor, 2009: *Science*



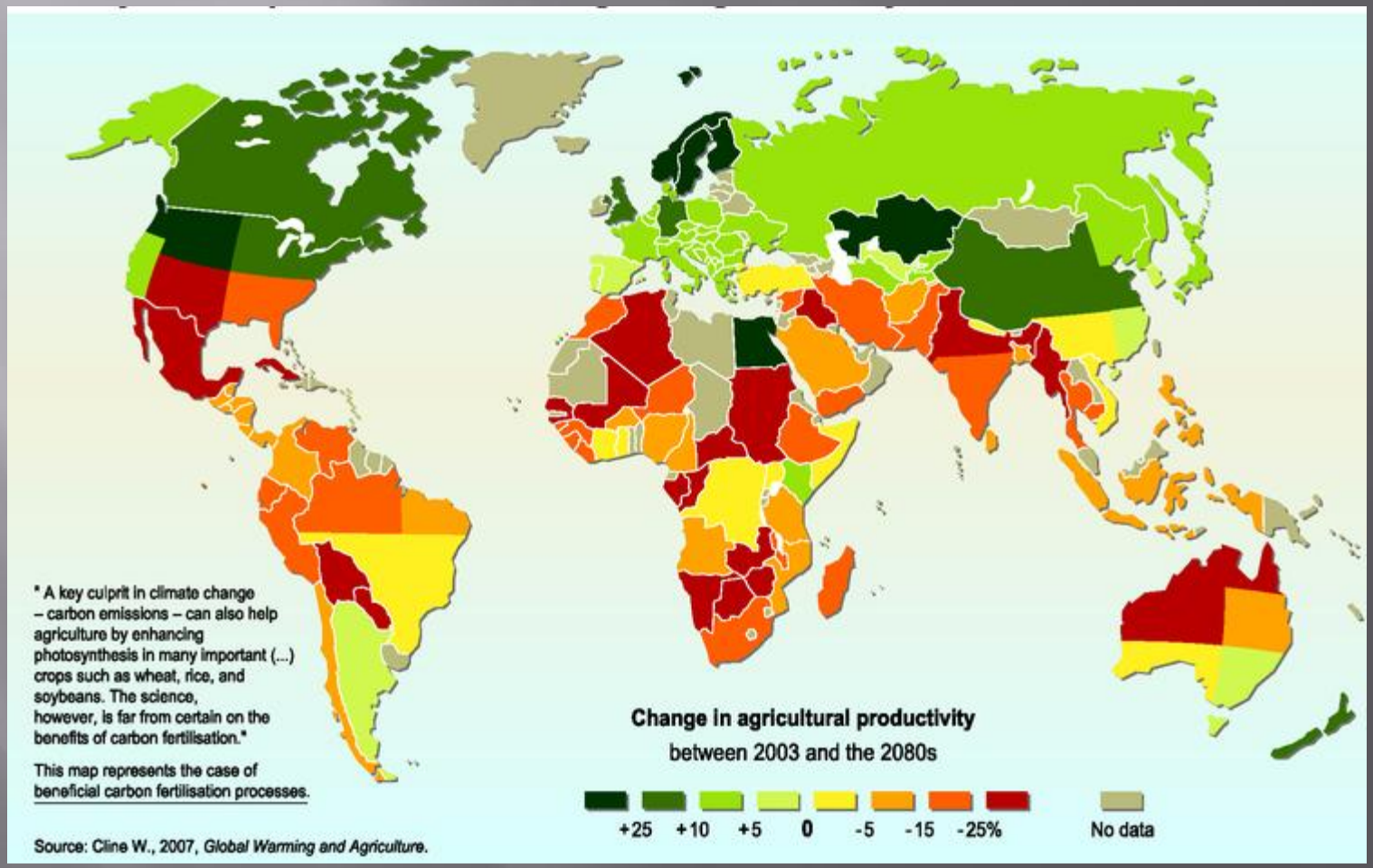
Mass, C. 09 Aug. 2012. http://cliffmass.blogspot.com

Peak temperatures reduce maize production

- Recent crop trials from 123 research stations in East and Southern Africa showed that:
  - Days above 30°C reduced maize yield by at least 1%
  - 32°C was twice damaging than 31°C

Source: Lobell, D. 2011. *Nature Climate Change*

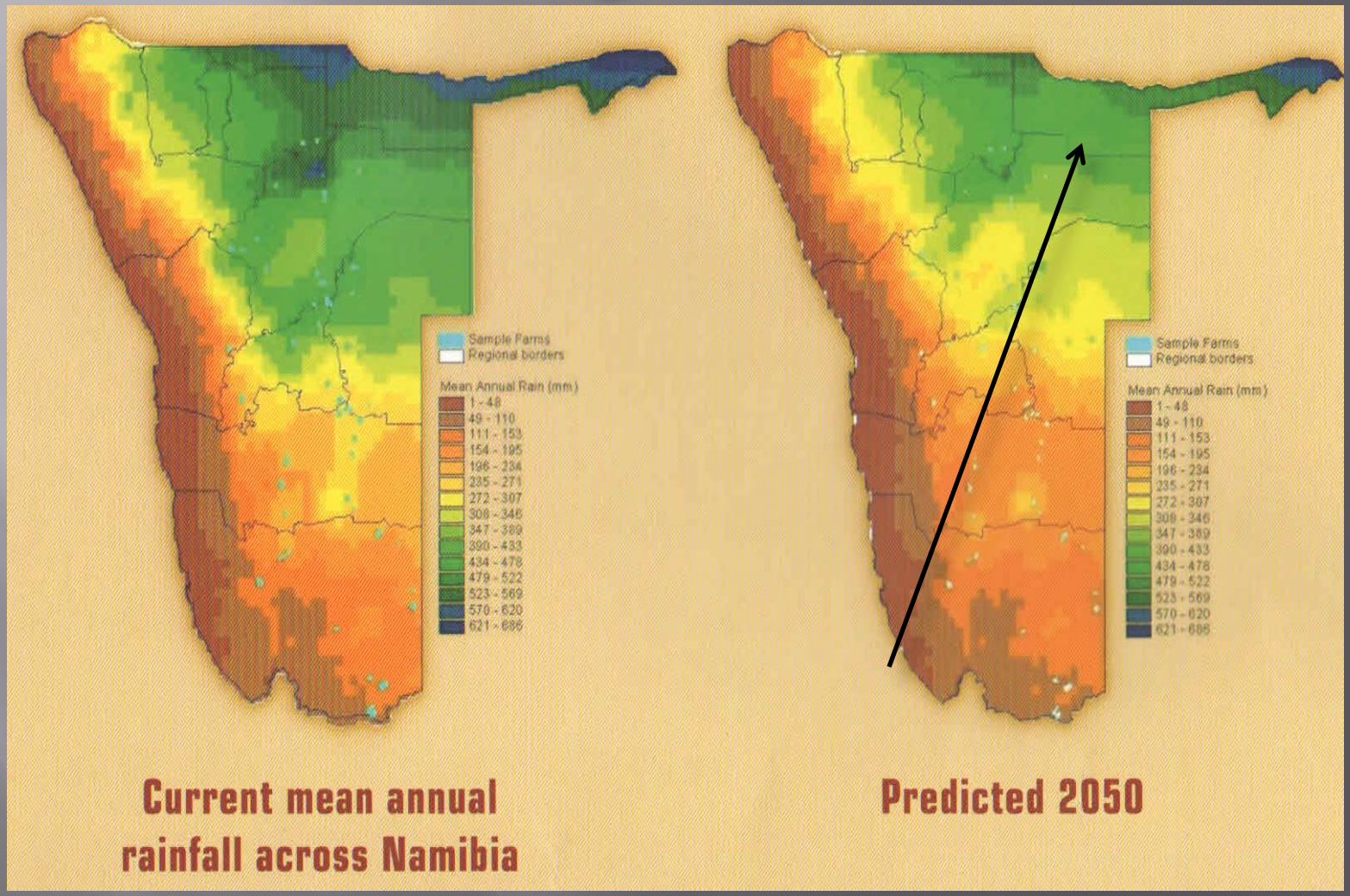
Projected impact of CC on agricultural yields



Climate change impacts on crop production

- Shift in agro-ecological zones
- Shorter growing season
- Decline of arable land in Southern Africa
- High temperatures / high water demand
- Lowered crop production
- Inundation / flooding (elsewhere)

Shift in rainfall pattern and Agro-ecological zones



Source: MET, vulnerability of Namibia to climate change

Climate change will increase Food Insecurity is Sub-Saharan Africa

- Due to the combination of:
  - Repeated exposure to droughts and floods,
  - High reliance on rainfed agriculture and livestock for basic food security and national economic growth, and
  - Widespread degradation of its agricultural resource base (Padgham, J. 2009)
  - Low technological capacity to adapt to a warming climate;

Climate change and Food Prices

BloombergBusinessweek
News From Bloomberg

Djibouti's High Food Prices Leave 88% of Rural Poor Needing Aid

By Brian Latham on November 01, 2011 | 0 Comments

Drought in the US, is pushing local prices;

If South Africa receives less rain, the local maize market will move to import parity, pushing prices even higher

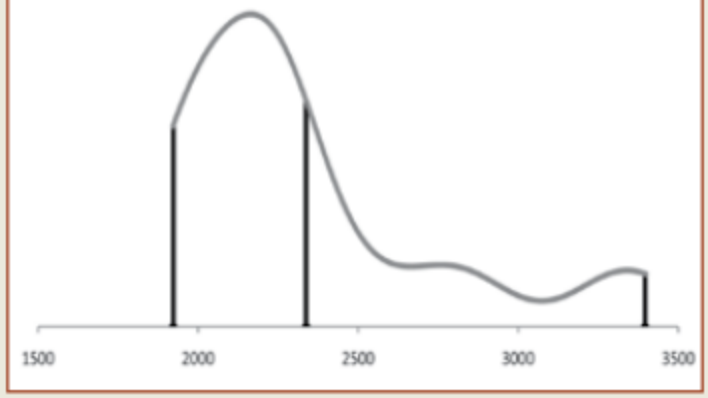
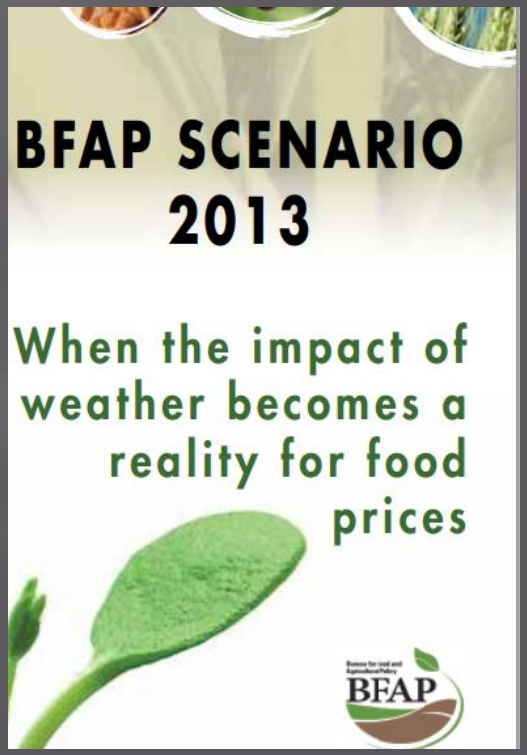


Figure 1: SAFEX white maize price, 2013 (R/ton)

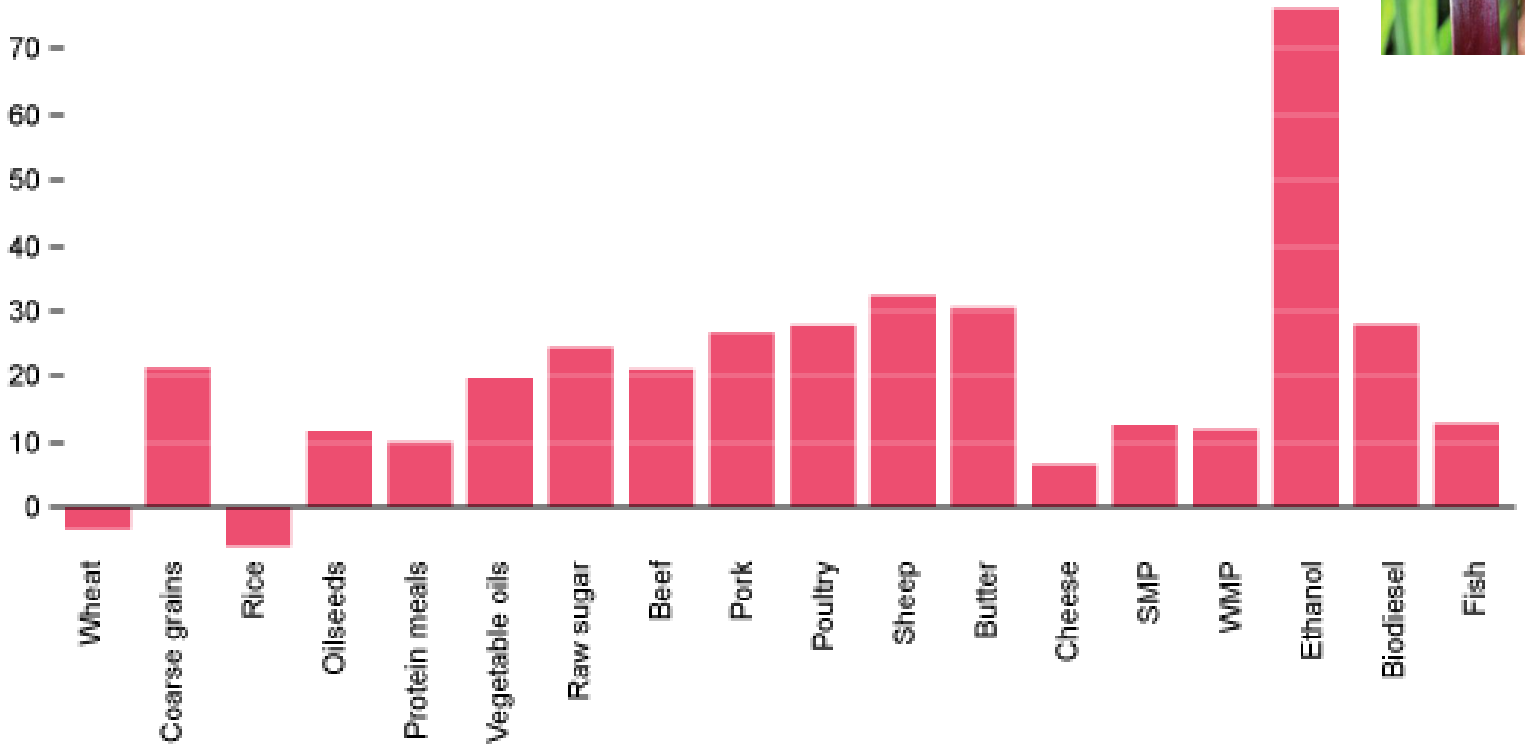


Bureau for Food and Agricultural Policy, 2012

Climate change and Food Prices

OECD-FAO
Agricultural Outlook
2012-2021

Price changes in real terms, % (2012-21 compared to 2002-11)



Source: OECD

Effects of Land and Resource Tenure On Food Security

What is tenure

- It is a bundle of rights that defines:
  - The rules of access to land, fisheries, forests and other natural resources.
    - **Who** is entitled?
    - Entitled to **what**? **When**? **Where**? **How**?
  - The organisation that sets the rules
    - How is the organisation constituted?
    - How are rules set?
    - Monitor compliance? Sanctions and incentives? Review of rules.

- Secure and equitable access to natural resources can allow people to produce food for consumption and to increase income.
- Inadequate and insecure tenure rights to natural resources often result in extreme poverty and hunger

http://www.fao.org/nr/tenure/governance-of-tenure/en/

Tenure issues that specifically could improve crop production systems

- Tenure arrangements should take into account local practices that are aimed at improving soil fertility (e.g. fallowing);
- Formalisation of land rights to access credits can lead to investment in agric production (Deininger et al. 2003, 2007);

- Formalisation should not only provide for user access to a land parcel, but also guarantee secure and tradable land right to ensure access to credits.

Climate change impact on livestock production

- Reduced rainfall and increased variability;
- Increased pressure on limited forage, will lead to land degradation
- Greater mobility of pastoralists
  - Intra-country migrations
  - Across the northern border
- Switch to small stock farming
- Rural-urban migration

A relevant tenure for pastoralists should enable the following

- Greater flexibility in using spatially variable forage resources

- Ecologically-economically successful pastoral tenure arrangements are characterised by differing categories of rights of access, i.e.
  - Communally used rangeland (not open access)
  - Fenced-off small camp or crop field
  - Privately held (e.g. a seasonally-used well)
  - Group ownership (dry season post, usually a remote site)

Communal land reform - constraints-

- Current land reform promotes individualisation of communal lands
  - It is **practically** progressive privatisation of land by individuals;
  - While making the remaining land (the commons) vulnerable for further individualisation.
  - The absence of defensible group **resource tenure** arrangements renders such resources to open-access situations.
- A combination of household-level and village-level group titling will be more suitable for pastoralist to manage and access patch forage resources for their livestock.

The Hunter-Gatherer

- Opportunistic gathering of wild products such as fruits, wood and honey for home consumption and for sale have been used at times of crop failure

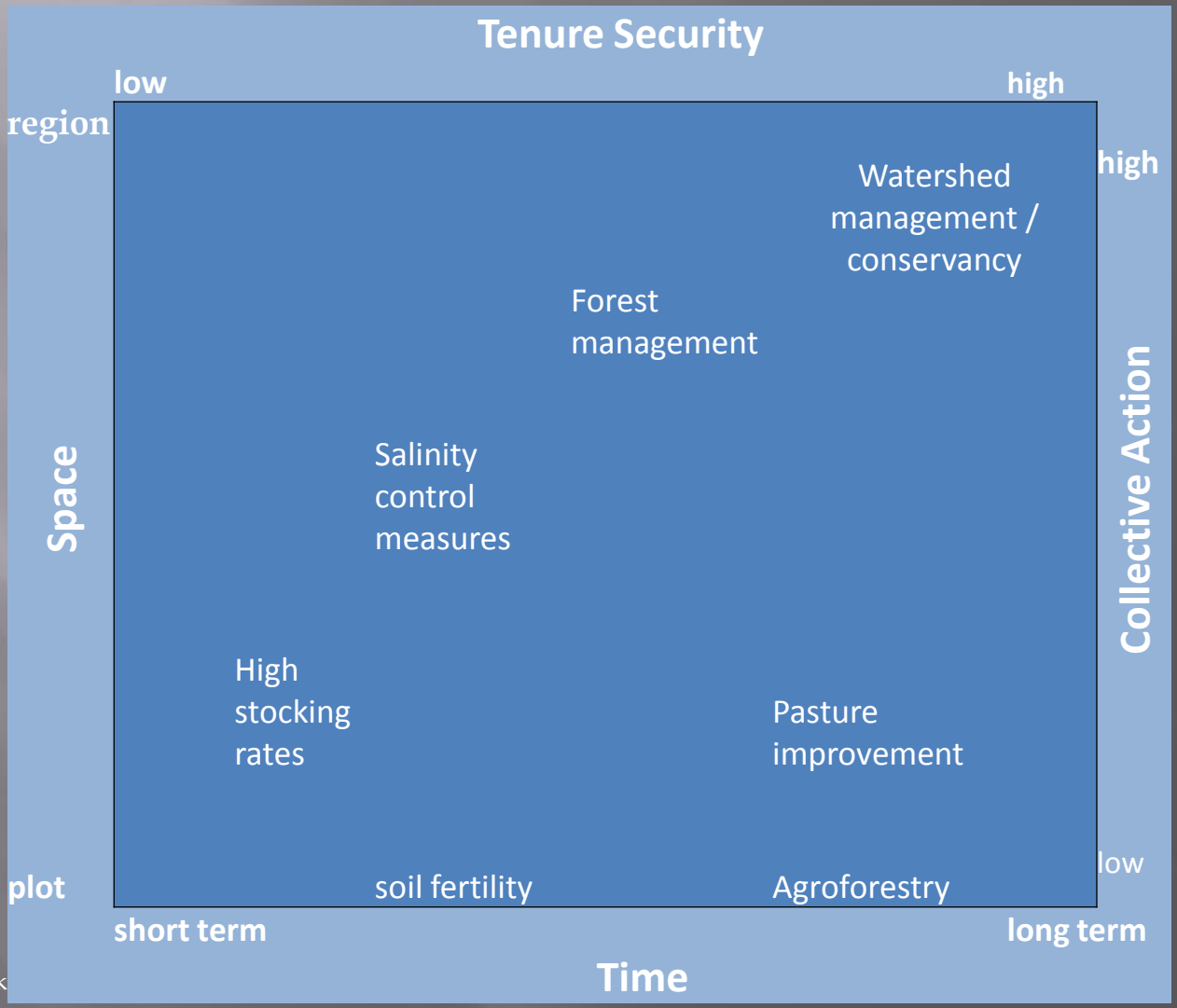
Thus it is a critical coping strategy among vulnerable rural residents

But whose resources are wild products?

- Individualisation of land parcels also tend to individualise land resources.
- Thus limiting access of gatherers to resources (and income) such as:
  - Medicinal plants (devil's claw)
  - Veld food / fruits (monkey oranges, marula, berries)
  - Fire wood
  - Poles and droppers
  - Thatch grass, etc.
- Hence increasing the vulnerability of gatherers

Tenure arrangements should be context-specific

Relationship among property rights, collective action and land management- hence opportunity for adaptive capacities



Adapted from: Meizen-Dick

In conclusion, a few adaptation issues

- the sensitivity of household livelihoods,
- and their capacity to respond to impacts depend on:

- Land size and productivity
- Availability and affordability of agricultural inputs
- The state of village infrastructure
- Access to cash income from off farm livelihood activities
- Connection to family and social networks
- Access to credit and markets
- Gender of household head
- Community or household self-organisation
- Security of land and resource tenure

Source: Reid & Vogel 2006, and author


Thank you